PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Ulrich Bonne et al.	Confirmation No.: 8252
Serial No.:	10/672,483	Examiner: John P. Fitzgerald
Filing Date:	September 26, 2003	Group Art: 2856
For:	PHASED MICRO ANALYZER V, VI	
Docket No.:	H0006099 (1100.1239101)	

PRE-APPEAL BRIEF REQUEST FOR REVIEW

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Lynn Thompson — August 15, 2006

Lynn Thompson — Date

Applicants submit that the Examiner's rejections contain at least the following errors and/or omissions of one or more essential elements needed for a prima facie rejection.

All claims 1-9 remain rejected as being unpatentable over Wise et al. (US 6,838,640) in view of Rounbehler et al. (US 5,300,758), and Philips et al. (US 5,196,039). Applicants respectfully traverse the rejection. In the Response to Arguments section of the Final Office Action mailed May 16, 2006, the Examiner cites numerous cases regarding the test for obviousness and asserts that "the Examiner clearly pointed out motivations to combine the references, from the Prior Art references themselves." Applicants submit that none of the cited references provide motivation for their combination, and additionally, that one of ordinary skill in the art would not have been motivated to combine the references based on any general knowledge. The motivation to combine the prior art references appears to come from Applicants' own specification, which is in error.

In the Office Action, the Examiner asserts the motivation for combining Wise et al. and Rounbehler et al., thus employing more than one concentrator connected together, is to provide means to permit rapid concentration of vapors, as taught by Rounbehler et al. While Rounbehler et al. does teach their system of two series-connected vapor concentrators as permitting rapid

concentration of vapors, Rounbehler et al. teaches that this is "achieved at high speed by electrical circuitry which provides rapid, precise heating of VC1, VC2, GC1, and GC2." See column 2, lines 32-34. Rounbehler et al. later describes the rapid, precise heating:

> The outer metal tube is also connected to a source of electric power for controlled, very rapid resistance heating of the metal tube- for example, from about 10°C. to 250°C. in about ***one second***. This very rapid heating, preferably accomplished automatically under programmed control...is continually monitored and employed as a feedback parameter in controlling the power applied to the tube

Emphasis added; see column 5, lines 3-11. Rounbehler et al. thus appear to teach a device in which sufficient power is needed to achieve very rapid heating (240°C in ***one second***) of the gas in order to concentrate the vapors. In contrast, Wise et al. teach "a low-power, battery-operated, temperature-programmed fast μGC" to "achieve a temperature rise of 100°C in ***200 sec***." Emphasis added; see column 5, lines 33-34 and 26-29. The device of Rounbehler et al. thus appears to require a strong power source to achieve the very rapid heating required for the concentrators as opposed to the low-power, slower heating device of Wise et al. Applicants submit that in view of the significantly faster heating required for the concentrators of Rounbehler et al., one of ordinary skill in the art would not be motivated to add a concentrator as taught by Rounbehler et al. to the low-power, battery-operated device taught by Wise et al. Further, the low-power, battery-operated device of Wise et al. would not appear to achieve the very rapid, precise heating required to achieve the rapid vapor concentration of Rounbehler et al.

Further, even if one were to attempt such a combination, it is not clear how the teachings would be combined. In particular, it is not clear how the very rapid heating that appears to be required for the concentrators of Rounbehler et al. would be incorporated into the low-power, battery-operated, low thermal mass structure of Wise et al. The Examiner asserts that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference, rather the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. The Examiner also asserts that one of ordinary skill in the art would be able to employ the teachings/methods of the prior art in any type of device, miniature/micro or otherwise. The Examiner has not, however, provided any indication of how the complex heating and concentrating elements of Rounbehler et al. could be achieved or incorporated into the low-power micro device of Wise et al.

The Examiner asserts that "one of ordinary skill in the art would clearly be motivated to employ the specific teachings of the Prior Art references and make the proper combination as a result of their teachings and disclosures." Applicants respectfully submit that such statements do not provide any indication as to why one would desire to combine the teachings of Wise et al. and Rounbehler et al. The motivation provided by the Examiner for combining Wise et al. and Rounbehler et al. is "providing means to permit rapid concentration of vapors", pointing to column 2, lines 28-31 of Rounbehler et al. However, Wise et al. teach their device as including a multi-stage pre-concentrator 28, thus it appears concentration of vapors is already provided for in the Wise et al. device. It is not clear how adding additional concentrators to the Wise et al. device would provide means to permit rapid concentration of vapors over the means already provided by the pre-concentrator taught by Wise et al. It would appear that making the Examiner's asserted modification to the Wise et al. device would result in a duplicated structure. Applicants submit that there is no motivation in the cited references, common knowledge or common sense of a person of ordinary skill in the art to add the concentrators of Rounbehler et al. to the device of Wise et al. that already has a multi-stage pre-concentrator.

Additionally, Applicants submit that even if one were to combine the teachings of Wise et al., Rounbehler et al., and Philips et al., there is no reasonable expectation of success in making such a combination. As stated above, Wise et al. teach a low-power, battery-operated device that achieves an increase in temperature of 100°C in 200 seconds, whereas Rounbehler et al. teach a device that appears to require an increase in temperature from 10°C to 250°C in one second. It is not clear how the concentrators of Rounbehler et al., apparently requiring very rapid heating, would be incorporated into a device such as that disclosed by Wise et al.

In the Advisory Action mailed July 21, 2006, the Examiner asserts that one of ordinary skill in the art would be well aware of any type of power source and its subsequent employment in any fashion, and that simply because one reference uses low-power and another appears to use a higher power is not sufficient to negate their combination. Applicants respectfully disagree. As the Examiner states, the test for obviousness is what the references would have suggested to one of ordinary skill in the art. While one of ordinary skill in the art may be well aware of both low- and high-power systems for heating, Applicants submit that the vastly different heating requirements of the Wise et al. and Rounbehler et al. devices would negate their combination.

Applicants submit that, while one of ordinary skill in the art may understand that the low-power, battery-operated device of Wise et al. could be modified to include the concentrator and a very fast, high-power heating device required by the concentrator, as taught by Rounbehler et al., there is no indication of why one would make such a combination. Wise et al. already teaches a pre-concentrator in their device. The Examiner has not provided any indication of why one of ordinary skill in the art would add the concentrator of Rounbehler et al., which would likely require an additional power and/or heating source, to the low-power, battery-operated device of Wise et al. Because the pre-concentrator of Wise et al. appears to provide the desired gas/vapor concentration needed for the purposes of Wise et al., there does not appear to be any motivation for one of ordinary skill in the art to add a concentrator as taught by Rounbehler et al., especially in view of the likely additional modifications necessitated by the faster heating needed by Rounbehler et al.'s concentrator.

Additionally, it appears that modifying the low-power, battery-operated device of Wise et al. to include the concentrator of Rounbehler et al. may result in an inoperative device because the power and very rapid heating requirements of Rounbehler et al.'s concentrator do not appear to be met by the low-power, battery-operated device of Wise et al. Alternatively, it would appear that further modifications to the device of Wise et al. would be required in order to achieve the very rapid heating required by the concentrator of Rounbehler et al., which would appear to destroy the low-power, battery-operated portability of the Wise et al. device. Applicants submit that neither Wise et al. nor Rounbehler et al. provide motivation for their combination, and actually teach away from such a combination. The only motivation appears to come from Applicants' own specification, which is an error.

The Examiner also asserts that it would have been obvious to one of ordinary skill in the art to modify the individual heating elements taught by Wise et al. and use instead the heater of Philips et al. within the channels of the pre-concentrator of Wise et al. to provide thermal modulation to accumulate and focus, refocus and then accelerate a concentration pulse in the carrier stream without the loss of orthogonality. Applicants respectfully disagree. Philips et al. teach a two-dimensional chromatography system in which thermal modulation is used to focus, refocus and accelerate a concentration pulse through two dimensions to separate chemical components of a sample. See column 4, lines 38-59. Loss of orthogonality is important in the

two-dimensional chromatography of Philips et al. The gas chromatographs of Wise et al. and Rounbehler et al. do not, however, involve a two-dimensional separation, thus the Examiner's asserted motivation for combining Philips et al. with Wise et al. and Rounbehler et al. is clearly based on Applicants' specification, which is in error. The methodologies and systems of Wise et al. and Philips et al. are vastly different and Applicants submit that there is no motivation for combining their teachings. Additionally, it is not clear how one of ordinary skill in the art would accomplish such a combination. Philips et al. teach a device in which the outlet of a first column is connected to the inlet of a second column. The thermal modulator is taught as being connected between the outlet of the sample injection device and the inlet of the first column or between the outlet of the first column and the inlet of the second column. See column 5, line 43 through column 6, line 5. It is not clear how the thermal modulator of Philips et al. would be connected to the micro-gas chromatograph of Wise et al. Applicants submit that there is no motivation to combine the teachings of Wise et al. with either Rounbehler et al. or Philips et al., and that even if one were to make such a combination, the resulting device would not appear to operate as taught by Wise et al. Additionally, such a combination would not result in the device presently claimed. Reconsideration and withdrawal of the rejection are respectfully requested.

Respectfully submitted,

Date: 08/15/06

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